ITAD

Carleton University

ONE SMALL STEP FOR MAN

EXOSKELETON ASSISTIVE WALKING (EAWA) DEVICE

MOTIVATION

- A FOURTH-YEAR CAPSTONE PROJECT, CURRENTLY IN ITS EIGHTH YEAR RUNNING
- ITAD INNOVATES AND DEVELOPS ROBOTICS AND THE HEALTHCARE ENVIRONMENT
- ALLOWING CLINICIANS TO USE TELEPRESENCE TO PROVIDE CARE REMOTELY
- TELEPRESENCE IN HEALTH, ASSISTIVE DEVICES, INDEPENDENT LIVING

PAST PROJECTS

VERSATILE ASSISTIVE ROAMING DEVICE (VARS)

AUTOMATED BEDSIDE ASSISTANT (ABA)

DESIGN GOALS

- LIGHTWEIGHT
- LOW POWER
- SUITABLE FOR DATA COLLECTION
- SUPPORT 40% OF BODY WEIGHT

- SUPPORT 40% OF USERS BODYWEIGHT
- FOR USE WITH STROKE PATIENTS AND INCOMPLTE SPINAL CORD INJURIES
- SUPPORT DURING REHABILITATION ‘NORMAL’ GAIT
- LOWER LIMB EXOSKELETONS SHOWN TO BE EFFECTIVE IN REHABILITATING WALKING ABILITY

ACHIEVEMENTS

- COMPLETE DESIGN OF EXOSKELETAL CHASSIS
- ACTUATION OF SINGLE-LEG HIP AND KNEE JOINTS
- EXPLORATION OF EMG SIGNALS AND USER INTENTION

TEAMS

- EMG BASED CONTROL
- BIOMEDICAL DESIGN & HUMAN FACTORS
- MECHANICAL DESIGN
- CONTROLS & SENSING
- SOFTWARE & ELECTRONICS

OPEN TO:

ALL STUDENTS IN:

- DEPARTMENT OF MECHANICAL AND AEROSPACE
- DEPARTMENT OF SYSTEMS AND COMPUTER ENGINEERING
- DEPARTMENT OF ELECTRONICS